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EXAMINER
BAKER, STEPHEN M

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/623,605	LEE ET AL.
	Examiner	Art Unit	
	Stephen M. Baker	2133	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *15 August 2006*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-27* is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-27* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *22 July 2003* is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a) ☐ All b) ☐ Some * c) ☐ None of:

    1. ☐ Certified copies of the priority documents have been received.

    2. ☐ Certified copies of the priority documents have been received in Application No. _____.

    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
  Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claims 1-27 are objected to because of the following informalities:

Regarding claims 1, 11, 14, 22 and 26, it is re-iterated that "determining a minimum transition density" apparently should be "encoding responsive *to* a minimum pulse transition density," or "determining that a retraining flit is required" or the like, because apparently only a free-cycling timer of predetermined time-out rate is used to determine when retraining flits are used [0028]. Again it is noted that the invention apparently actually operates to *maintain* a minimum transition density, a parameter presumably developed during the *design-stage* of the transmitter, rather than operating based on a minimum transition density parameter generated by the transmitter *in situ*.

Appropriate correction is required.

Specification

2.   The disclosure is objected to because of the following informalities:

Again, reference is hereby made to the discussion of "*determining* a minimum transition density" in paragraph 1 of this Office action, with reference to the many portions of the specification using the same phrasing synonymously with *maintaining* a minimum transition density.

It is re-iterated that the optional mechanism of CRC polynomial selection is not shown in any detail and is somewhat confusingly described to imply that a CRC

generator polynomial is selected with the aim of increasing the number of transitions in the retraining flit.

It is also re-iterated that, apparently contradicting the statement that the payload, control and error detection data in *one* retraining flit meet the link's minimum transition density requirement [0023], is the existence of an arrangement described as if it calculates the *multiple* number of retraining flits required in each retraining period [0028].

Again, there is no description or drawing figure showing the transmission or format of any signals other than the retraining flits themselves. Again, the exemplary minimum transition density of 2-5 transitions in 1024-4096 bits [0023] seems unrealistic in that it appears to imply retraining could be accomplished by un-modulated data without the need for special flits specifically designed for retraining.

Again, a specific manner by which the data module 32 operates to "stagger" the payload data over the payload region in order to reduce switching noise and ensure that some non-specified switching noise constraint is met is not discussed or shown in any detail.

It's re-iterated that the specification is generally ambiguous regarding whether a "retraining" (sic) flit's payload and sideband carry data useful for anything besides "retraining" (sic – for anything besides idle line transmission for maintaining the receiver clock, *i.e.* for anything other than use as an "idle" flit) data.

Appropriate correction is required.

Drawings

3.   The drawings are objected to under 37 CFR 1.83(a) because they fail to show

details of the "CRC polynomial" selection and of the staggering of data across a payload

as described in the specification. Any structural detail that is essential for a proper

understanding of the disclosed invention should be shown in the drawing. MPEP §

608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required

in reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next

Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5.   Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It's here re-iterated that the intended meets and bounds of a "retraining flit" have not been defined clearly enough to exclude an idle flit or any other modulation-coded data flit from being applied to at least some of the claims. It is noted again that there is apparently no requirement for the receiver clock lose synchronization to any specific degree before being "retrained," there also being no requirement that *non-retraining* data be placed between "retraining flits."

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7.   Claims 1, 2, 6-10, 14-17, 19-24, 26 and 27 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent No. 6,941,425 to Osborne (hereafter "Osborne").

Osborne discloses software-based timer-controlled (i.e. intermittent) transmission

of multiple "retraining" flits that determine the transition density when the transition

density is at a minimum transition density level, thus "determining a minimum transition

density." Osborne's "retraining" flits also include a data portion, a control portion and a

CRC portion.

8.   Claims 1, 2, 6-10, 14-17, 19-24, 26 and 27 are rejected under 35 U.S.C. 102(a)

as being anticipated by U.S. Patent No. 7,010,607 to Bunton (hereafter "Bunton").

Bunton discloses transmission of idle (i.e. intermittent "retraining") flits that

maintain a specified minimum pulse density, *i.e.* that determine the transition density

when the transition density is at a minimum transition density level, thus "determining a

minimum transition density." Bunton's idle flits include a data field, a control field in a

sideband, and a CRC.

Claim Rejections - 35 USC § 103

9.   Claims 3, 4, 12, 16, and 25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Bunton in view of U.S. Patent No. 6,684,363 to Cassiday *et al*

(hereafter "Cassiday").

Bunton does not discuss details of the CRC generation used by Bunton's system.

Cassiday discloses details of CRC generation for flits, including table-lookup selection

of a multibit sequence (*i.e.* polynomial) as a CRC term contribution for each uncoded

payload bit, and using control data (i.e. sequence number data) to further modify the

payload CRC result, thereby "identifying a plurality of cyclic redundancy code (CRC)

polynomials" and "determining a corresponding CRC checksum for each of the plurality of CRC polynomials based on the control data and the payload data," as well as "selecting a CRC polynomial from the plurality of CRC polynomials, the selected CRC polynomial resulting in a CRC checksum that has sufficient transitions to meet the minimum transition density, the error detection data including the resulting CRC checksum." It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Bunton's flit CRC generation by using Cassiday's flit CRC generator. Such an implementation would have been obvious because of the noted suitability of Cassiday's flit CRC generator arrangements to high-speed CRC generation.

10.   Claims 3, 4, 12, 16, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osborne in view of Cassiday.

Osborne does not discuss details of the CRC generation used by Bunton's system. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Osborne's flit CRC generation by using Cassiday's flit CRC generator. Such an implementation would have been obvious because of the noted suitability of Cassiday's flit CRC generator arrangements to high-speed CRC generation.

11.   Claims 5, 11-13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunton in view of U.S. Patent No. 6,496,540 to Widmer (hereafter "Widmer").

Bunton does not disclose "staggering the payload data across a payload region ... based on switching noise constraints." Widmer discloses transmitting the payload portion of a flit while "staggering the payload data across a payload region" (Figs. 3 and 4), presumably based on constraints including switching noise constraints" such as physical channel separation and isolation in the parallel channel paths. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Bunton's flit generation by using Widmer's flit data staggering. Such an implementation would have been obvious because Widmer's flit data staggering is presumably based at least in part on necessary physical channel separation and isolation in the parallel channel paths.

12.   Claims 5, 11-13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osborne in view of Widmer.

Osborne does not disclose "staggering the payload data across a payload region ... based on switching noise constraints." Widmer discloses transmitting the payload portion of a flit while "staggering the payload data across a payload region" (Figs. 3 and 4), presumably based on constraints including switching noise constraints" such as physical channel separation and isolation in the parallel channel paths. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Osborne's flit generation by using Widmer's flit data staggering. Such an implementation would have been obvious because Widmer's flit data staggering is presumably based at least in part on necessary physical channel separation and isolation in the parallel channel paths.

Response to Arguments

13.   Applicant's arguments filed 15 August 2006 have been fully considered but they
are not persuasive.

Although applicant's response is pointedly less than responsive to the examiner's
observations or to applicant's specification, it is appreciated that prosecution has been
materially simplified by it, for reasons to be explained below.

Firstly, applicant is thanked for compelling the examiner to interpret the word
"determining," where used in "determining a minimum transition density" as being
intended to have a trivial meaning. As applicant indicates on page 11 of the response,
the invention supposedly involves "a scheme that ensures that *sufficient MTD (sic)* is
being met." Applicant's argued "sufficient minimum transition density" is clearly a self-
redundant phrase, and it's noted that applicant can only mean that the invention is
actually merely a *scheme that ensures that the MTD is being met.*, exactly as the
examiner has previously suggested. By this, applicant's is essentially implying that any
well-known idle flit meets the disclosed essential properties of a basic "retraining" flit.

Applicant's statement that claimed CRC selection process and interleaving
limitations need not be shown in the drawings, as they are supposedly "conventional," is
understood to be an admission that any interleaving or CRC generation process at all
should be considered sufficient to meet the interleaving and CRC generation in the
relevant claims at question, however applicant is entirely incorrect in assuming a

claimed element may not be shown when it is the case that such element has a claim devoted specifically to its details not shown.

The most obvious and significant self-contradiction applicant has apparently developed is that although "retraining" only requires 2 to 5 transitions per 4096 bits, and despite that each "row" of non-CRC data in the "retraining" flit is freely controllable, even to the extent that each "row" of multiple rows in the "payload area" of a "retraining flit" can be additionally selected to have row-unique values within it, it nonetheless is still deemed useful in some inexplicable circumstance that the CRC portion of the "retraining" flit be generated by a special selection process that isn't shown or described clearly, or in any detail.

Applicant incorrectly asserts that the examiner considers "CRC polynomial" selection to be "confusing because it implies that a CRC generator is selected with the aim of increasing the number of transitions." Of course there's nothing confusing at all about selecting a "CRC generator polynomial" or selecting a "CRC polynomial" (two entirely different things, a distinction which applicant appears to completely overlook) to produce a maximum number of transitions, and the examiner of course has never said there was anything confusing about such things. What's actually deemed confusing is that: 1) there's clearly no need for any CRC selection process at all in such a context; 2) that the CRC polynomial selection process remains un-shown although claims are specifically devoted to it; 3) that the prolix phrase "CRC polynomial" is being used in the specification despite that all CRCs are well-understood to be polynomials and that the polynomial (i.e. sequentially ordered) nature of all CRCs is not particularly relevant to

the number of 1-0 and 0-1 transitions the CRC remainder demands. The latter prolixity

arguably has the effect of implying incorrectly that a CRC *generator* polynomial is

perhaps selected.

It's still not clear whether the claimed "retraining" flit carries meaningful payload

data (and/or control data) or not. In the first case the flit is either a data flit or control flit,

and in the latter case the flit is an idle flit.

Conclusion

14.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

15.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Stephen M. Baker whose telephone number is (571)

272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30

PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stephen M. Baker
Primary Examiner
Art Unit 2133

smb